

1 SOAH DOCKET NO. 582-07-2673
2 TCEQ DOCKET NO. 2007-0204-WDW
3

4 APPLICATION OF TEXCOM GULF § BEFORE THE STATE OFFICE
5 DISPOSAL, L.L.C. FOR TEXAS §
6 COMMISSION ENVIRONMENTAL §
7 QUALITY COMMISSION § OF
8 UNDERGROUND INJECTION §
9 CONTROL PERMIT NOS. WDW410, §
10 WDW411, WDW412, and WDW413 § ADMINISTRATIVE HEARINGS
11

12 SOAH DOCKET NO. 582-07-2674
13 TCEQ DOCKET NO. 2007-0362-IHW
14

15 APPLICATION OF TEXCOM GULF § BEFORE THE STATE OFFICE
16 DISPOSAL, L.L.C. FOR TEXAS §
17 COMMISSION ENVIRONMENTAL §
18 QUALITY COMMISSION § OF
19 INDUSTRIAL SOLID WASTE PERMIT §
20 NO. 87758 §
21 § ADMINISTRATIVE HEARINGS
22

23 DIRECT TESTIMONY OF EDWIN A. WILSON
24

25 Q Can you please state your name.
26

27 A Edwin Ardis Wilson, although I go by Art
28

29 Q Did you previously provide testimony in this matter?
30

31 A Yes, I now have additional information and thus, additional testimony.
32

33 Q Do you understand this testimony is a continuation of the testimony you
34 previously gave?
35

36 A Yes.
37

38 Q 30 TAC 305.49(a)(7) requires submittal of a letter from the Railroad Commission
39 stating that drilling the disposal wells and injecting industrial or municipal waste
40 into the subsurface stratum will not endanger or injure any known oil or gas
41 formation. Did TexCom request a response from the RRC to comply with this
42 law and what was the outcome?
43

44 A TexCom did comply with the law by letter dated September 16, 2005 to the RRC.
45 TexCom received a letter dated September 16, 2005 from the RRC, which gave
46 them a green light to proceed.
47

EXHIBIT

tabbles

B

1 Q Did the RRC contact the owner of the mineral rights to confirm that the owner's
2 mineral rights would not be endangered or injured?
3
4 A No. The RRC did not contact Wapiti to discuss the potential harm to Wapiti's
5 mineral rights. Wapiti first learned of the TexCom project when contacted by one
6 of our individual protestants.
7
8 Q Does Wapiti still own the mineral rights?
9
10 A No. Wapiti made a decision to sell the mineral rights to Denbury and dropped
11 their lawsuit against TexCom.
12
13 Q Is it possible that TexCom's waste disposal could harm Denbury's mineral rights?
14
15 A Wapiti thought so and I do as well. In fact, it is my understanding that Denbury
16 plans to use an oil recovery process that Wapiti was not using.
17
18 Q Even though TexCom has a letter from the RRC giving them approval, do you
19 think the statute of law 30 TAC 305.49(a)(7) has been satisfied?
20
21 A Based on what I have just shared with you, it is obvious that the intent of the law
22 has not been satisfied. How could the RRC give approval without ever contacting
23 the producer?
24
25 Q TCEQ 0623 UIC VI (D) requires the applicant to submit results of all
26 compatibility test on all well construction components that may be in contact
27 with the waste stream, including the wellhead, tubing, packer, long string casing
28 and cement. Did TexCom submit these results?
29
30 A No. TexCom did not perform compatibility tests.
31
32 Q In fact, TexCom states in their application: "The TexCom Facility has not been
33 built and the final composition of the waste stream can not be determined until the
34 facility is built and clients for disposal are put under contract. Therefore, there is
35 no compatibility testing that can be conducted in the material of construction at
36 this time." (VI.D.1). Do you agree that compatibility test cannot be performed at
37 this time?
38
39 A No, I disagree. Even though contracts are not in place, TexCom can conduct
40 compatibility testing for the products they intend to handle and for which they
41 will be allowed to process under permits.
42
43 Q TexCom identifies their injection zone as the entire Cockfield Formation, which
44 includes three sand packages. Is that correct?
45
46 A Yes.

1 Q Do you remember Mr. Casey testifying that a 30-foot shale strata separates the
2 Upper and Middle Cockfield and that the Middle and Lower Cockfield are
3 separated by 40 feet of shale? (Transcript, pg. 316:3-16)
4

5 A Yes.
6

7 Q Where do you think Mr. Casey obtained those shale thicknesses?
8

9 A I don't know. In the original TexCom application, the shale thicknesses were
10 stated as 32 feet separating the Upper and Middle sands and only 27 feet
11 separating the Middle and Lower sands as I have shown on my Exhibit 22.
12

13 Q Is Exhibit 22 a document you created?
14

15 **Offer Exhibit 22**
16

17 Q If my math is correct, the thickness of the shale separating the Lower and Middle
18 units was increased by 48% compared to the original application to which he
19 affixed his seal.
20

21 A Yes, it's a huge percentage increase.
22

23 Q Do you know where TexCom obtained the shale thicknesses used in their
24 application?
25

26 A It appears they used data from the existing well, WDW-410.
27

28 Q So from the original application to the time Mr. Casey testified in court, the shale
29 thickness went from 27 feet to 40 feet. Is that the way you see it?
30

31 A Yes.
32

33 Q Do you recall significant discussion during the 2007 case hearing about the fault
34 4,400 feet to the south of TexCom's site and the mention of thin shales separating
35 the Cockfield sands at this fault?
36

37 A Yes. Witnesses spoke of the shale strata existing at the major fault.
38

39 Q Do you know where TexCom obtained geological data substantiating the shale
40 strata at the major fault line?
41

42 A No I don't. If fact, according to TexCom, oil was produced only from the Upper
43 Cockfield in the area; therefore, to the best of my knowledge, TexCom did not
44 have well logs or core samples to verify that thin shales exist at the fault or
45 anywhere within one mile of the disposal wells.
46

1 Q In other words, wells were drilled into the Upper Cockfield, but did not penetrate
2 into the Middle and Lower sands. So geological records do not exist in this area
3 below the Upper Cockfield. Is that your assessment?
4

5 A TexCom did identify four wells (C-57, C-82, C-461, and RM5) that penetrate at
6 least through the Upper Cockfield, but all of these wells are greater than one mile
7 away from the TexCom site. I don't recall TexCom testifying to a data source
8 substantiating laterally continuous shale strata in the Cockfield.
9

10 Q In your opinion, do you believe that the thin shale strata observed at well WDW-
11 410 is laterally continuous all the way to the major fault or for that matter laterally
12 continuous in any direction?
13

14 A I am not qualified to answer that; however, according to conversations with
15 geologist Marci Bent, one cannot assume the shales to be laterally continuous
16 based on formation observations only from well WDW-410. One needs log data
17 or cores from multiple wells in the area that penetrated through the entire
18 Cockfield to verify the lateral extent of the thin shales. Without verification, I
19 think the court must assume that the shales are not laterally continuous.
20

21 Q We have already discussed that somehow TexCom arbitrarily increased the
22 thickness of the shale strata (if it even exists) by 48%. Do you find anything else
23 peculiar with the oral testimony given in 2007 and the original application in
24 regards to the thin shales?
25

26 A Yes. Let my quote from TexCom's original application (V.B.3.c., Revision
27 3/31/06) wherein they state, "The Injection Zone in the subject facility includes
28 the Upper, Middle, and Lower Cockfield Sand Members. These three thick sand
29 packages are separated by persistent shales but the shales appear not to be thick
30 enough to isolate the individual sand members either stratigraphically or across
31 faults in the AOR."
32

33 TexCom admits in their application that the shales cannot be consider adequate to
34 isolate the Cockfield members; however, in the proceeding of the hearing,
35 TexCom is claiming that the shale strata separating the Lower and Middle
36 Cockfield will serve as a confining layer thereby keeping the injected wastes in
37 the Lower sand. They also claim that the shale separating the Middle and Upper
38 sands will serve as a barrier.
39

40 I find it outrageous that the same people that prepared the application will
41 contradict themselves in court when their backs are against the wall.
42
43
44
45

1 Q Based on your testimony thus far, do I understand correctly that you believe the
2 thin shales are not laterally continuous?
3

4 A I believe the shales are not laterally continuous and cannot be proved by TexCom
5 to be laterally continuous throughout the cone of influence.
6

7 Q Is there any significance to the absence of the shale on the TexCom application?
8

9 A The significance is monumental. Without shale barriers within the Cockfield
10 formation, the only confinement strata to satisfy state law is the thick Jackson
11 formation.
12

13 Q Why is it monumental?
14

15 A Based on testimony thus far, I have no problem with the Jackson formation being
16 a suitable confinement zone. With the Jackson formation being the only
17 confinement, however, the monumental impact is TexCom not being able to
18 satisfy the law.
19

20 Q Can you be more specific?
21

22 A Yes. The Catahoula Aquifer is immediately above the Jackson formation as
23 shown on my Exhibit 22. All witnesses testifying about the Catahoula Aquifer
24 agree that it meets the EPA definition of a USDW (Underground Source of
25 Drinking Water). The law [30 TAC 331.121(c)(4)(A)] states, "The owner or
26 operator shall demonstrate to the satisfaction of the executive director that the
27 confining zone is separated from the base of the lowermost USDW or freshwater
28 aquifer by at least one sequence of permeable and less permeable strata that will
29 provide an added layer of protection for the USDW or freshwater aquifer in the
30 event of fluid movement in an unlocated borehole or transmissive fault."
31 (underline for emphasis)
32

33 Because the Catahoula is in direct contact with the Jackson formation, a sequence
34 of permeable and less permeable strata to provide an added layer of protection for
35 the USDW does not exist. Therefore, TexCom cannot satisfy the law.
36

37 Q Do you recall that TexCom spent a considerable amount of time in the
38 proceedings of 2007 discrediting the Catahoula Aquifer as a USDW?
39

40 A I remember it very well.
41

42 Q In looking back at testimony, Dr. Langus testified that significant quantities of
43 organic molecules such as benzene and toluene are injected at Class II wells.
44 (Transcript pg. 456:9-10) Do you agree with his assessment?
45
46

1 A Not at all. In fact, I find it strange that TexCom never referred to these wells as
2 what they really are: salt water injection wells. I believe that TexCom totally
3 mischaracterized Class II wells.
4

5 Q What is your understanding of a saltwater injection well?
6

7 A My entire professional career dealt, in part, with crude oil gathering from
8 production leases. Produced oil, which can contain various amounts of water, is
9 piped to a tank battery where treatment equipment removes water to a limit of
10 about 0.3%. The treated oil is then gauged in the run tank or metered through a
11 LACT unit and either trucked or pipelined to its destination. The brine water is
12 disposed at a Class II well. The water may not be pure brine water, but neither
13 does it contain significant amounts of oil as TexCom would have the court
14 believe. After all, the operator is trying to recover every ounce of valuable oil and
15 only discharge the remaining water.
16

17 Q Did you find anything in the TexCom application prepared by Dr. Langus'
18 company, ALL Consulting, that addressed the Catahoula as a USDW?
19

20 A Yes. They state, "No water wells use Catahoula aquifers in the AOR although
21 the water is likely treatable to health and aesthetic standards." (V.B.3.b). ALL
22 Consulting makes this admission in the application and then paints an
23 entirely different picture on the witness stand.
24

25 Q Are you aware that to exempt an aquifer as a USDW requires a legal procedure
26 defined in 30 TAC 331.13?
27

28 A Yes, I am aware of that requirement of law.
29

30 Q Has the Catahoula Aquifer been exempted as a USDW?
31

32 A No it hasn't. I checked with EPA Region 6 and they confirmed no exemption.
33

34 Q Does it appear to you that the court should consider TexCom's testimony
35 discrediting the Catahoula Aquifer.
36

37 A No, the court should not consider TexCom's testimony discrediting the Catahoula
38 Aquifer. The aquifer is a recognized USDW, it is in contact with TexCom's
39 confining zone (the Jackson formation), and no added layer of protection exists
40 between the USDW and the confining zone.
41

42 Q Do you know where Montgomery County currently gets its drinking water and do
43 you know of any problems associated with the source.
44

45 A Montgomery County currently gets its drinking water from the Gulf Coast
46 Aquifer System as shown on my Exhibit 22. The Gulf Coast Aquifer System is

1 being depleted because the recharge rate is less than the usage rate. This is a
2 serious problem for the region and recognized by Lone Star Groundwater
3 Conservation District. In fact, at the Lone Star board meeting on February 9,
4 2010, the board authorized their General Manager to engage professional
5 consultants to consider the use of brackish groundwater. The Catahoula Aquifer
6 is a source of brackish water.
7

8 Contrary to the testimony of Dr. Langus, the Catahoula Aquifer must be
9 considered as a viable source of drinking water.
10

11 Q Mr. Wilson, there is an exemption to the requirement of an added layer of
12 protection in 30 TAC 331.121(c)(4)(D). The law specifically states, "the
13 commission may approve a site which does not meet the requirements in
14 subparagraph (A) of this paragraph if the owner or operator can demonstrate to
15 the commission that because of the geology, nature of the waste, or other
16 considerations, that abandoned boreholes or other conduits would not cause
17 endangerment of USDWs, and fresh or surface water." In your opinion, can
18 TexCom satisfy the exemption?
19

20 A No, they cannot satisfy the exemption. TexCom has claimed all along that if
21 waste did get into the Middle and Upper Cockfield, the waste would dissipate into
22 those sands and the cone of influence would be reduced. I agree with that
23 assessment; however, I believe a cone of influence would still exist. May I
24 remind the Administrative Law Judges that 30 TAC 331.121(c)(4)(A) requires the
25 added layer of protection between the lowermost USDW and the confining zone
26 "in the event of fluid movement in an unlocated borehole or transmissive fault."
27 I am not so concerned about a transmissive fault through the Jackson formation;
28 however, to satisfy the law, the court must assume an "unlocated borehole"
29 worst-case scenario with the unlocated borehole being in the immediate proximity
30 to the perforations in the waste injection tubing.
31

32 Q TexCom spent hours convincing the court that oil production was from the Upper
33 Cockfield and records indeed seem to substantiate that. Why should the court
34 consider an unlocated borehole immediately adjacent to a disposal well?
35

36 A The only real answer that's necessary is that it's the law; however, I'll give
37 another valid reason. Mr. Casey testified in December 2007 that well No. 66D
38 shown on the TexCom site was actually not on the site but in another survey, the
39 Lemuel Smith. TexCom also submitted testimony that RRC Well No. 129 (C-
40 428), shown as a separate well from RRC Well No. 29 (C-11) (both on the
41 TexCom site) was actually Well No. 29. In other words, a well did not exist at
42 location 129 as shown on the RRC map. Mr. Mike Ward and I visited the RRC
43 on 12/19/07 to investigate Well No. 129. An employee named Rosemary could
44 not find records for well No. 129, but did find well No. 129 spotted on a map
45 dated 2002. One could conclude that a well does exist, but without records.
46 The point is, RRC records are known to have inaccuracies. The court should

1 consider that a deep well shown by the RRC in another survey could in fact
2 be on the TexCom property adjacent to a disposal well. Mr. Casey reported
3 four wells in his new prefiled written testimony that penetrate below the __Upper
4 Cockfield in the AOR. Two of these wells are deeper than the injection interval.
5 So we know some deep wells do exist. Mr. Casey also identifies five wells (C-
6 389, C-438, RM-2, C-427, and C-428) within the 2.94-mile AOR for which
7 records cannot be found. Missing records are a grave concern; however, the
8 "unlocated" borehole provision of the law should govern.
9

10 Q And if an unlocated borehole was adjacent to a disposal well, would that be a
11 problem?
12

13 A It certainly would be a problem. The well would be in the cone of influence and
14 therefore be a path or conduit for wastes to travel up to the Gulf Coast Aquifer
15 System and the Catahoula Aquifer. We would have to assume that the well was
16 cased, and improperly abandoned. I believe that is the intent of the law. We
17 know from the testimony of Mr. Eddie Stephan that some wells were never
18 plugged.
19

20 Q Let's move on and talk about piezometric surface of the fluid. In 30 TAC
21 331.121(c)(4)(B) "The owner or operator shall demonstrate to the satisfaction of
22 the executive director that within the area of review, the piezometric surface of
23 the fluid in the injection zone is less than the piezometric surface of the lowermost
24 USDW or freshwater aquifer, considering density effects, injection pressures, and
25 any significant pumping in the overlying USDW or freshwater aquifer."
26

27 Q Would you please explain piezometric surface?
28

29 A The piezometric surface is the level to which fluid will rise within a pipe that
30 penetrates into a confined aquifer. The word aquifer as used here would refer to
31 any water bearing strata, not just a freshwater aquifer.
32

33 Q What is a confined aquifer?
34

35 A A confined aquifer exists when water is bounded, or confined, by impervious
36 materials on the top and bottom and the water is under pressure greater than
37 atmospheric pressure.
38

39 Q So if a well penetrates into the confined aquifer, water will rise in the well. Is that
40 correct?
41

42 A Yes. Water will rise to a level called the piezometric surface. An artesian well is
43 a prime example of the piezometric surface extending all the way to the surface of
44 the ground. The piezometric surface is easily calculated based on the pressure in
45 the confined aquifer. At the TexCom site in Montgomery County, the confined

1 aquifer of concern is the Cockfield formation into which TexCom would inject
2 waste.

3
4 Q I am showing you Exhibit 23; is this prepared by you?

5
6 A Yes

7
8 Q What does exhibit 23 show?

9
10 A The piezometric surface level that I calculated.

11
12 **Offer Exhibit 23**

13
14 Q Would you tell me the piezometric surface level that you calculated based on the
15 Cockfield formation pressure.

16
17 A The Cockfield piezometric surface is 674 feet below ground surface (see Exhibit
18 24 calculations), but this is without injection pressure. We must include the effect
19 of injection pressure to comply with State law, so the real piezometric surface
20 would actually be at ground level.

21
22 Q Does Exhibit 24 accurately show calculations that you made?

23
24 A Yes

25
26 **Offer Exhibit 24**

27
28 Q If the Cockfield formation pressure raised a waste column to within 674 feet of
29 the surface, would that be within the depth range of the Gulf Coast Aquifer
30 System?

31
32 A Yes. The Gulf Coast Aquifer System extends from the surface to a depth of
33 approximately 1,525 feet as shown on Exhibit 23.

34
35 Q Your testimony is consistent with that of Dr. Langus in that the piezometric
36 surface in the injection zone is greater than the lowermost USDW. In fact, the
37 piezometric surface lies within the Gulf Coast Aquifer System even without
38 injection pressure. What is the significance of the piezometric surface?

39
40 A The significance is profound. If an unlocated improperly abandoned well was
41 anywhere within the waste plume, even beyond the cone of influence, the
42 piezometric pressure head of the Cockfield formation is sufficient to move that
43 waste into the Gulf Coast Aquifer System through corroded casing in the
44 unlocated well. If the unlocated well was in contact with the cone of influence, a
45 greater liquid driving force would move even larger quantities of waste into the

1 aquifer. And remember, Mr. Eddie Stephan confirmed that wells exist that are not
2 plugged.

3
4 Q What is the danger of fluid movement through an abandoned well or unlocated
5 abandoned well that extends even beyond the cone of influence.

6
7 A By definition, the cone of influence is an area within which the pressure in the
8 injection zone is sufficient to cause upward movement of fluid into an
9 Underground Source of Drinking Water. When considering piezometric head for
10 the confined Cockfield Formation, the cone of influence is actually infinite.

11
12 Q I have not heard the word infinite used in association with the cone of influence.
13 Would you please explain this?

14
15 A Yes. Existing pressure in the Cockfield Formation, without additional injection
16 pressure, is sufficient to cause upward movement of fluid into the USDW.
17 Therefore, sufficient pressure exists at any distance from the TexCom well; thus,
18 an infinite cone of influence.

19
20 Q If we assume that the unlocated abandoned well lies within the cone of influence
21 and that the casing contains a mud plug, is there still a danger to the USDW?

22
23 A Yes, there is a danger to the USDW. TexCom calculated 421 psi as the cone of
24 influence pressure for displacing a mud plug in an abandoned well and I
25 confirmed their calculation.

26
27 Q TexCom has three different 30 year models; one for the original application, one
28 based on the TCEQ Commissioners interim order, and a third based on the well
29 fall-off tests. What is your interpretation of the results?

30
31 A Each model produces a different cone of influence because each model uses
32 different formation permeability. The March 2009 model and the October 2009
33 model both assume the major fault is closed. A closed fault is probably an
34 incorrect assumption based on testimony given thus far in the hearing. Regardless
35 of the model chosen, each falls short of being able to comply with Texas laws.

36
37 Per the written testimony of Mr. Bob Smith, wells exist that are not properly
38 abandoned. Whether these wells fall within the cone of influence depends on
39 which model one pulls from the hat. Here are the facts: 1) Mr. Eddie Stephan
40 knows that some wells were never plugged, 2) Ms. Marci Bent and Mr. Bob
41 Smith found actual well records which show improper abandonment, and 3)
42 TexCom has proved the inaccuracy of well locations as provided in their
43 testimony. What more does the court need? And furthermore, by law, one must
44 consider the presence of an unlocated borehole. One would be compelled, by
45 rational thinking, to consider the unlocated borehole as being improperly

1 abandoned and a conduit between the USDW and the cone of influence and/or
2 waste plume.

3
4 Q Let's move on to the proposed TexCom surface facility. Do you see any
5 problems with the proposed TexCom operation?

6
7 A One of the problems I want to address is odor from the facility. Mr. Brassow
8 confirmed in his testimony that odor could be present at the shaker screen
9 (transcript pgs. 493 - 495). This would of course require a waste stream to be
10 odorous, which he confirms in the same referenced testimony. So it has been
11 established that some waste streams could have odor. Since TexCom does not
12 have contracts in place with waste generators, it is reasonable to assume that *many*
13 waste streams could have odor.

14
15 The primary source of odor would be from on-site storage tanks. When asked
16 about odor from tank vents during the hearing, Mr. Brassow totally mislead the
17 court. When asked if vapor is displaced from the tanks as trucks unload, Mr.
18 Brassow stated, "If you had a pressure relief valve, then you could put fluids into
19 the tank. Any air in the tank would be slightly compressed, and nothing would be
20 released. So it wouldn't be displaced under those circumstances." (transcript pg.
21 542:19-23). Stating that nothing would be released is a misrepresentation.

22
23 Pressure relief valves on atmospheric storage tanks are designed to relieve at
24 about 6 ounces of pressure to avoid rupturing the tanks. When a tank is being
25 filled, the pressure relief valve opens and vapor is discharged directly to the
26 atmosphere. The vapor is NOT retained in the tank under compression!! Tank
27 suction nozzles (outlets) are approximately one-foot off the bottom; therefore,
28 when a tank is pumped out, approximately one-foot of liquid remains in the tank.
29 As tanks are being pumped out, air is pulled into the tank through the
30 pressure/vacuum vent. This air can become saturated with vapor due to
31 evaporation of the wetted surface of the tank shell and evaporation of liquid that
32 remains in the tank below the suction nozzle. The saturated vapor is then
33 displaced to the atmosphere when the tank is once again filled and this cyclic
34 process continues day after day. The amount of vapor release to the atmosphere
35 is directly proportional to the volume of liquid waste received into the tank.

36
37 A large amount of obnoxious vapor and the chemicals contained therein can be
38 displaced from each one of the tanks receiving wastes. Depending on
39 atmospheric conditions, this will adversely affect the quality of life of individuals
40 for a considerable distance from the site. I consider this a real nuisance to the
41 residents of the community.

42
43 Q What experience do you have with atmospheric storage tanks that has led you to
44 these conclusions?

1 A I worked with design, construction, and maintenance of atmospheric storage tanks
2 for 30 years of my professional career. Many of these tanks were installed with
3 pressure/vacuum vents to allow vapor discharge at a rate sufficient to prevent
4 rupturing the tanks and likewise to allow sufficient air to be pulled into the tanks
5 as the tanks were being pumped out. Atmospheric storage tanks with low vapor
6 pressure products are usually installed without pressure/vacuum vents, i.e. vents
7 are open directly to the atmosphere. In any case, vapor in the tanks is discharged
8 directly to the atmosphere.
9
10 Q Does this conclude your prefiled testimony?
11
12 A Yes